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A.D. 1872, 11th November. N° 3356.

SPECIFICATION

OF

JAMES ALEXANDER MANNING.

TREATING FŒCAL MATTERS.

LONDON:
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1873.

A.D. 1872, 11*th* *November*. N° 3356.

Treating Fœcal Matters.

LETTERS PATENT to James Alexander Manning, of the Inner Temple, London, Esquire, for the Invention of "IMPROVEMENTS IN THE TREATMENT OF HUMAN FŒCAL MATTERS, AND IN THE APPARATUS OR MEANS EMPLOYED THEREIN."

Sealed the 6th May 1873, and dated the 11th November 1872.

PROVISIONAL SPECIFICATION left by the said James Alexander Manning at the Office of the Commissioners of Patents, with his Petition, on the 11th November 1872.

I, JAMES ALEXANDER MANNING, of the Inner Temple, London, Esquire, do hereby declare the nature of my said Invention for "IMPROVEMENTS IN THE TREATMENT OF HUMAN FŒCAL MATTERS, AND IN THE APPARATUS OR MEANS EMPLOYED THEREIN," to be as follows :—

This Invention relates partly to improvements in the process for the treatment of fœcal matters and the waste of towns, for which Letters Patent were granted to me on or about the 26th of July 1869, No. 2269, parts of which improvements are applicable to other manufacturing purposes.

Manning's Improvements in Treating Fœcal Matters.

In the Specification of my said Patent provision was made for the utilization of the carburetted hydrogen gas evolved during the combustion of the coal employed in the manufacture of manure for lighting the factory or for illuminating purposes generally, but owing to the large amount of atmospheric air with which the said gas is combined as it passes from the condensing tank into the gas holder, unless it be napthalized, it would but ill fulfil the required purposes. Now I propose, according to my present Invention, to utilize such gas for another purpose, by which a great economy of coal, labour, and the cost of construction, may be achieved.

By my said process, as specified under the said Patent of 1869, I proposed to evaporate to dryness the solid and fluid collections of the fœcal matters of towns, and amongst other things I proposed to quicken the boiling of the excretæ in my fire-brick evaporating chamber by means of a coal furnace under the bottom or inverted arch of the said chamber, with cylindrical fire-brick flues, conveying the heat gases and smoke from such furnace under the whole length thereof, and returning the same by side flues of a similar construction along the sides of the said chamber, discharging the heat, smoke, and gases into the interior of the chamber from which they were withdrawn or exhausted in combination with vapor, and discharged into the condensing tank by an exhaust and discharge fan situate at the opposite extremity of the long fire-brick evaporating chamber in question; I now find that instead of employing this mode of heating the bottom of my said evaporating chamber it will be more advantageous and economical in every respect to utilize the carburetted hydrogen gas so charged with atmospheric air as a heating power by introducing and burning the same as a gaseous fuel under and along the sides of the said evaporating chamber, or wherever it may be found advisable so to do. The said mixture of carburetted hydrogen gas and air so obtained may obviously be applied to other manufactures as a means of heating where large quantities of coal are consumed.

In my said former Specification I stated that during the process of evaporating the solid and fluid portion of the excretæ to dryness, I introduced a jet of steam into the chamber, but instead of simply admitting one or more jets of steam into the chamber at the commencement and near the end of the operation after the greater portion (say 75 or 80 per cent.) of the water is evaporated, I now propose to admit the

steam into the hollow shaft of the agitator, on the under side of which small perforations are made, so that by the to-and-fro motion of such agitator it will disseminate the said steam on either side, and thereby effectually preventing injury to the agitator and fan, until shortly after the commencement of the operation, when vapor will rise in sufficient force to attain that object, whereupon the steam is turned off, as it is also at the end of the process, when the sediment is reduced to dryness.

In order to render my said process for the treatment of fœcal matter applicable to sewered towns as well as to those where sewers have no existence, and thereby to purify the vitiated atmosphere arising from the generation of napthitic gases and their admixture with the air, I propose to insert under the basin of every watercloset a galvanized iron, tin, or other suitable movable can or vessel, the neck of which shall fit into the mouth of the soil pipe thereof, and I use the soil pipe merely for the conveyance into the sewers of the water requisite for the rinsing out and cleansing of the basin. The can or other vessel employed contains a sufficient quantity of chemical deodorants to prevent the possibility of fermentation or offensive odor arising therefrom, and it is intended to be removed at convenient intervals, and to be replaced by a clean can also provided with the chemical deodorants.

In carrying out this part of my Invention, the closet is arranged so that in pulling up the handle the pan, which is now situate under the bottom of the basin and over the soil pipe, shall be depressed or loosened so as to permit all the solid and fluid excretæ it contains to pass instantly into the before-mentioned moveable can beneath; no part of the water used for cleansing the basin being allowed to enter into the soil can or moveable vessel in question. Upon lowering or returning the handle to its proper place, the water from the reservoir above will rush into the basin and cleanse the same, causing a valve at the side but near to the bottom of the basin to open, so that all the water so admitted may flow out into the existing drain pipe in connection with the common sewer.

Upon the removal of the cans, though no bad gases or offensive odor could eminate therefrom, still each can is immediately covered by a tight fitting lid or capsule, to prevent the possibly of the escape of any of its contents, even should the can by any accident fall in its removal.

I propose to employ coal soot as well as sea weed or other charcoal as deodorants, prepared and mixed together or used separately, and

combined or not with a sufficient quantity of sulphuric acid or other chemical substances, which shall enable them to absorb and hold the gases generated from the undigested and decomposing portions of the human food, which constitute a considerable per centage of the soil found in cess pits and the sewers of towns. I have found that one twentieth part in weight of the common soot and a smaller proportion even of the prepared soot or seaweed or other charcoal is more efficient than the earth now employed under what is known as the "earth-closet" system, as in their natural state they absorb the gases arising from the fermentation fœcal matters as fast as they are generated, and when prepared as before stated they prevent the possibility of fermentation, by which also the whole of the nitrogen is preserved for manures, and the generation of insect life is entirely prevented.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said James Alexander Manning in the Great Seal Patent Office on the 10th May 1873.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, James Alexander Manning, of the Inner Temple, London, Esquire, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Eleventh day of November, in the year of our Lord One thousand eight hundred and seventy-two, in the thirty-sixth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said James Alexander Manning, Her special license that I, the said James Alexander Manning, my executors, administrators, and assigns, or such others as I, the said James Alexander Manning, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "Improvements in the Treatment of Human Fœcal Matters, and in the Apparatus or Means employed therein," upon the condition (amongst others) that I, the said James Alexander Manning, my executors or administrators, by an instrument in writing under my, or their, or one of their hands & seals, should particularly describe and ascertain the

nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said James Alexander Manning, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, and the Drawings therein referred to (that is to say) :—

This Invention relates partly to improvements in the process for the treatment of fœcal matters and the waste of towns, for which Letters Patent were granted to me on or about the 26th of July 1869, No. 2269, parts of which improvements are applicable to other manufacturing purposes.

In the Specification of my said Patent provision was made for the utilization of the carburetted hydrogen gas evolved during the combustion of the coal employed in the manufacture of manure, for lighting the factory or for illuminating purposes generally, but owing to the large amount of atmospheric air with which the said gas is combined as it passes from the condensing tank into the gas holder, unless it be napthalized, it would but ill fulfil the required purposes. Now I propose, according to my present Invention, to utilize such gas for another purpose, by which a great economy of coal, labour, and the cost of construction, may be achieved.

By my said process, as specified under the said Patent of 1869, I proposed to evaporate to dryness the solid and the fluid collections of the fœcal matters of towns, and amongst other things I proposed to quicken the boiling of the excretæ in my fire-brick evaporating chamber by means of a coal furnace under the bottom or inverted arch of the said chamber, with cylindrical fire-brick flues, conveying the heat, gases, and smoke from such furnace under the whole length thereof, and returning the same by side flues of a similar construction along the sides of the said chamber, discharging the heat, smoke, and gases into the interior of the chamber from which they were withdrawn or exhausted in combination with vapor, and discharged into the condensing tank by an exhaust and discharge fan situate at the opposite extremity of the long fire-brick evaporating chamber in question; I now find that instead of employing

this mode of heating the bottom of my said evaporating chamber it will be more advantageous and economical in every respect to utilize the carburetted hydrogen gas so charged with atmospheric air as a heating power, by introducing and burning the same as a gaseous fuel under and along the sides of the said evaporating chamber, or wherever it may be found advisable so to do. The said mixture of carburetted hydrogen gas and air so obtained may obviously be applied to other manufactures as a means of heating where large quantities of coal are consumed.

In my said former Specification I stated that during the process of evaporating the solid and fluid portion of the excretæ to dryness I introduced a jet of steam into the chamber; but instead of simply admitting one or more jets of steam into the chamber at the commencement and near the end of the operation, after the greater portion (say 75 or 80 per cent.) of the water is evaporated, I now propose to admit the steam into the hollow shaft of the agitator, on the under side of which small perforations are made, so that by the to-and-fro motion of such agitator it will disseminate the said steam on either side, thereby effectually preventing injury to the agitator and fan, until shortly after the commencement of the operation, when vapor will arise in sufficient force to attain that object, whereupon the steam is turned off, as it is also at the end of the process when the sediment is reduced to dryness.

Fig. 1 of the accompanying Drawings is a sectional elevation of an apparatus constructed according to my Invention, and Fig. 2 is a transverse section of the same.

The evaporating vessels *a* (which I have shewn as made of cast iron) are each constructed with a removeable door *b*, and provided with a hollow rocking agitator shaft *c*, perforated at its under side, and working in suitable bearings. Through one of the bearings of each shaft steam may be admitted into the shaft by a pipe, as shewn at *d*, regulated by a suitable cock or tap. The evaporating vessels *a* are set in brickwork *e*, the parts exposed to the heat being fire-brick, and the brickwork is formed at one end with a bridge a^1, and a furnace or fire-place a^2 to each of the said vessels, the brickwork being continued in the form of an arched roof over each of the vessels *a*, so as to enclose a sort of flue space *g* above it, into which flue space hang suitable baffles *f* suspended to the roof. At the opposite end to the furnace or fire-place, each flue space *g* communicates with an exhausting and forcing fan *h*, suitably

actuated, whence a tube *i* leads to the condenser tank *j*, which contains water for absorbing the soluble gases, and is provided with an overflow pipe *k* dipping into an overflow tank *l*. The condenser tank *j* is formed with a water jacket j^1, as shewn, and is also provided with a pump *m* for withdrawing the permanent gases from the condensing tank, and forcing them into the gas holder *n*. From this gas holder there are two pipes or tubes *o*, each provided with a cock *p*, and with a suitable exit nozzle *q*, or one pipe *o* with two branches may be used. Each nozzle is situated just within the front part of a small fire-place *r*, of which there is one to each of the evaporating vessels *a*. From each of these little fire-places a flue *s* passes under the corresponding evaporating vessel, and thence to a suitable chimney or exit *t*, as shewn, provided with suitable dampers for regulating the draught, as well understood.

The operation of this arrangement is as follows :—By the action of the fans the heat and products of combustion from the furnaces or fire-places a^2 are drawn over the surface of the liquid contained in the evaporating vessels *a*, being caused to impinge against the said liquid by the baffles *f*, and the said products mixed with the gases evolved by the liquid under treatment are drawn out of the flue spaces *g*, and forced by the fans into the condenser tank, wherein they pass through the water contained in the said tank, which water absorbs the soluble gases, the permanent gases being drawn away by the pump *m*, and forced into the gas holder *n*, from which they pass in regulated quantities, as required, to the nozzles *q*, on issuing from which they are ignited by the small fires, and are so burnt under the bottoms of the evaporating vessels, which are thereby heated.

As the level of the liquid in the condenser rises it overflows into the overflow tank, the liquid from which may be withdrawn as required for utilization.

It will be obvious that the gases from the gasholder, besides being burnt under the evaporating vessels *a*, may be applied as a means of heating for other purposes.

Having described my said Invention and having explained the manner of carrying the same into practical effect, I hereby declare that I do not claim as novel the several parts or processes herein-before described or referred to, except when the same are used in and for my said Invention; with reference to which, what I claim as being novel

and original and therefore desire to have secured to me by the herein-before in part recited Letters Patent is, the utilization for heating purposes of the carburetted hydrogen gas evolved during the combustion of the coal employed in the manufacture of manure, and the general arrangement and construction of apparatus for that purpose, substantially as herein-before described.

In witness whereof, I, the said James Alexander Manning, have hereunto set my hand and seal, this Ninth day of May, in the year of our Lord One thousand eight hundred and seventy-three.

JAMES ALEX. MANNING. (L.S.)

LONDON:
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Printers to the Queen's most Excellent Majesty. 1873.

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MANNING'S Specification.

(1 SHEET)

FIG. 1.

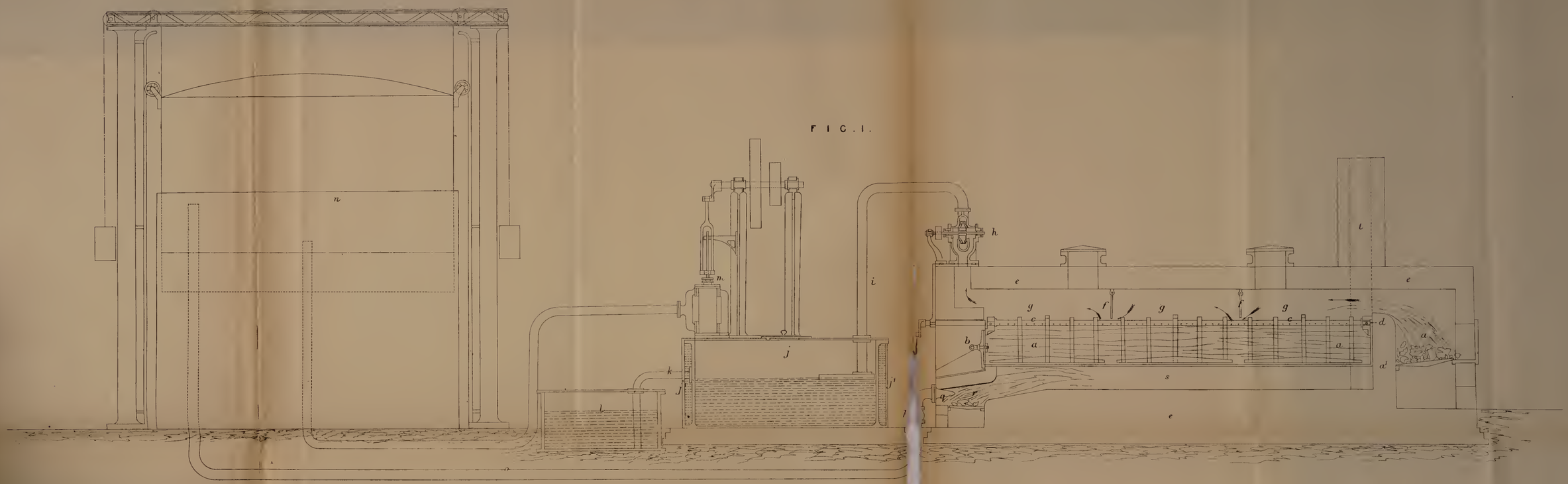
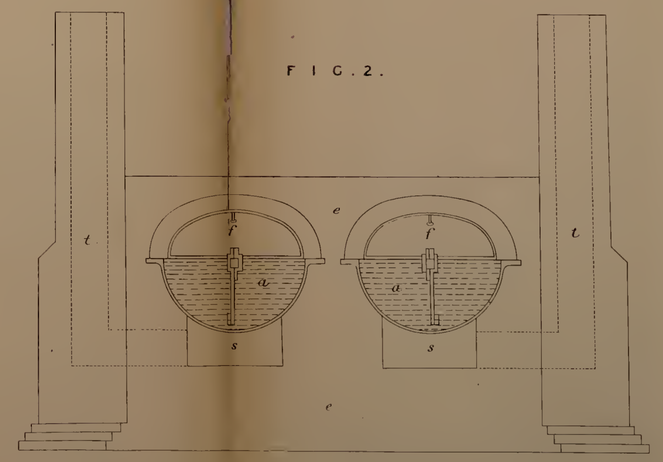


FIG. 2.



The filed drawing is partly colored.

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